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Journal of the Society of Arts.

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FRIDAY, JULY 12, 1867.

Announcements by the Council.

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Society's Visit to the Paris Exhibition.

The Council have directed the Secretary to make arrangements for a visit of the members of the Society to the Paris Exhibition. The period fixed for the visit has been extended from Monday, the 29th of July, to Friday, the 16th of August, in order to include the Napoleon fêtes. A reception-room has been provided for the use of the members during their stay, where their correspondence may be addressed, and where they will have the convenience of writing letters, making appointments with their friends, and where notices of all arrangements for visits to various places will be suspended. Lists of hotels and apartments will also be provided there for consultation.

A programme is in the course of preparation. Members contemplating visiting Paris at this time are requested to send in their names to the Secretary, in order that cards of membership and programmes may be furnished to them.

Artizans' Visits to Paris.

Her Majesty's Government have granted to the Society of Arts, in aid of the fund now being raised by the Society for assisting workmen, specially selected from various trades, to visit and report on the Paris Exhibition, the sum of £500, conditional on the Society raising a like amount by public subscription.

The following is the list of subscriptions up to the present date :—

H.R.H. the Prince of Wales, President ..	£31	10	0
Her Majesty's Government (conditional)..	500	0	0
Society of Arts	105	0	0
Earl Granville, K.G.	5	0	0
Lord de L'Isle	10	0	0
Thomas Twining	2	2	0
Sir J. P. Boileau, Bart.	5	0	0
George Godwin, F.R.S.	1	1	0
Vice-Chancellor Sir W. Page Wood, F.R.S.	10	0	0
W. H. Bodkin (Assistant-Judge)	3	3	0
Sir Rowland Hill, K.C.B.	3	3	0
Benjamin Shaw	2	2	0
Alfred Davis	10	10	0
Eugène Rimmel	5	5	0
Frederick Mocatta	2	2	0
James Marshall	2	2	0
Robert Dawbarn	1	0	0
Henry Vaughan	10	10	0
Philip Sancton	5	0	0
Somerset A. Beaumont	5	0	0
Decimus Burton, F.R.S.	1	0	0
W. Botly	1	1	0
Professor Robert Bentley	2	2	0
John Stuart Mill, M.P.	1	1	0
G. F. Wilson, F.R.S.	2	2	0
Henry Creed	1	1	0
The Marquis of Salisbury, K.G.	10	0	0
D. Roberton Blaine	2	2	0
William Hawes	2	2	0
Seymour Teulon	1	1	0
G. N. Hooper	2	2	0
Lord Taunton	5	0	0
Henry Cole, C.B.	1	0	0
A. Robb	1	1	0
S. Andrews	1	1	0
Thomas Dixon	1	1	0
Charles Telford..	1	1	0
Edmund Burke	2	0	0
W. H. Gore Langton, M.P.	5	0	0
J. R. Fowler	1	0	0
John Rutson	1	1	0
W. Fothergill Cooke	2	2	0
J. P. Gassiot, F.R.S.	5	5	0
The Duke of Devonshire	10	0	0

Collected in response to a Circular issued by the Birmingham Chamber of Commerce.

G. Dixon, Mayor of Birmingham	5	5	0
Messrs. Smith and Wright, Birmingham ..	5	5	0
Messrs. Griffiths and Browett, Birmingham..	5	5	0
Henry Weiss, Birmingham	2	2	0
W. H. M. Blews, Birmingham	2	2	0
W. Middlemore, J.P., Birmingham	5	5	0
Thomas Lloyd, Birmingham	2	2	0
Messrs. Elkington and Mason, Birmingham..	5	5	0
Messrs. John Hardman and Co., Birmingham	2	2	0
Messrs. F. and C. Osler, Birmingham ..	5	5	0
The Proprietors of the *Birmingham Journal and Daily Post*	2	2	0
The Proprietors of the *Birmingham Gazette*..	2	2	0
R. L. Chance, Birmingham	2	2	0
T. Avery, Birmingham	2	2	0
W. Tonks and Sons, Birmingham	2	2	0
W. Lucas Sargant, Birmingham	2	2	0
— Mountain (Messrs. Walter, May, and Co.), Birmingham	2	2	0
J. A. Williams, Birmingham..	2	2	0
Henry Charlton, Birmingham	2	2	0
W. Bartlett and Sons, Birmingham	5	0	0
John P. Turner, Birmingham	0	10	6
W. H. Avery, Birmingham	2	2	0
Messrs. Peyton and Peyton, Birmingham ..	3	3	0
James Cartland, Birmingham	2	2	0
Messrs. Smith and Chamberlain, Birmingham	2	2	0
Messrs. Baker and Son, Birmingham ..	2	2	0
Messrs. Hinks and Wells, Birmingham ..	2	2	0

Subscriptions may be forwarded to the Financial Officer, at the Society's House.

The Council are now prepared to receive the names of any workmen recommended by their respective trades as fit and proper persons to undertake this important duty on behalf of their fellow workmen.

Proceedings of the Society.

◆

Food Committee.

A meeting of the Sub-Committee on Fish took place on Tuesday, 28th May. Present: Mr. Benjamin Shaw in the chair; Mr. Ware and Professor J. Wilson.

Mr. John Powell, fish dealer, of Earl-street, Seven-dials, attended before the Sub-Committee to give information relative to the distribution of fish among the poorer classes in London, &c.

Mr. Powell stated that he was in the habit of regularly attending the sales in Billingsgate-market, and he handed in to the Committee a copy of the return of the quantity of each kind of fish which was brought into Billingsgate-market for sale on that morning, which it appeared was issued daily on the opening of the market, as a guide to the dealers, and could be obtained by them on application to the market officials. Mr. Powell proceeded to give the following evidence in reply to interrogatories put by the Committee:—

He buys his fish in the usual way, direct from the salesmen generally, but sometimes of the fishermen—some kinds. There is a great deal of fish comes into the market that ought not to be sold, but nevertheless is sold, and distributed about London, in the streets and in shops and stalls—fish which may have been a long time on the passage in bad weather. The vessels lose their ice and the fish is spoilt. Such fish is bought by the lower class of traders and hawkers. There are two inspectors, for the purpose of preventing such fish from being sold, but they are seldom to be seen; sometimes they are not there for hours together. They are supposed to be there, but very often they are not to be seen. I have sometimes seen them condemn fish that was eatable, and at others they have passed that which was bad. All, or nearly all, the fish passes through the hands of the salesmen. It is usually sold by auction, all in a hurry, and the highest bidder for each lot of fish is the purchaser. I buy direct from the salesman, not from a middle man. The sales are for cash, but if you are known on the market you need not always pay cash. I sell direct to the consumers the fish which I buy in the market, but I sometimes send fish to dealers at Reading and Portsmouth. I sell my fish now in a shop; previously to that I got my living by selling in the streets. The quality of that generally sold from the barrows varies—some is good and some bad. That fish is generally bought direct from the market, or from persons like myself. If fish is scarce the barrowmen get it from the "cut-away" shops—these are little shops, but a great deal of business is done in them. I think there is quite as much bad fish in the large shops as in the small ones, because the large shops have ice-wells, where they keep fish for so long a time that at last it becomes bad. The small shops cannot have ice-wells.

Have you ever heard, and are you aware of the fact that a good deal of fish is sometimes destroyed in Billingsgate-market to keep up the price?—A good deal is packed away, day after day, rather than sell it cheaper. Sometimes I have seen fish condemned which was good enough for any one to eat. The fish is sent to the market on commission. One salesman makes a good price of things, and another will put them by till the next day, because he will not sell at a lower price than others. The next day they bring it out again, and if not sold then it is put away again, or, if kept too long, is sometimes condemned. A very large quantity of fish is distributed in London by hawking it with barrows. As a general rule they do not sell bad or unwholesome fish. They get it as good as the fishmongers; it all comes from the same market. Of course they buy only the cheaper kinds of fish. As regards the prices of fish sold from the barrows, and the same kinds of fish sold in the fishmongers' shops there is a great deal of difference. The fish principally sold from the barrows consists of plaice, and mackerel, and soles when they are reasonable.

What would be the difference in price between fish sold from the barrow and that sold in the larger shops?—They could get from me for fourpence as much as they would have to pay a shilling for at the larger shops, and the quality is the same, as they would be the same kind of fish, bought in the same market; the one would be just as good as the other, and out of the same vessel.

Are the best fish picked out and the refuse sold to the hawkers?—No; there is no picking out at all in the market. The fish hawker buys his direct from the salesman.

Are there not a number of middle-men, who buy fish in large quantities and sell it again to the small dealers?—There are plenty such, but it is only the people in little shops, who may not require more than a dozen of plaice or a dozen pair of soles, who buy of them. The fish carried about for sale in the country is purchased of middle-men, who send it into the country by the railways. The poor buy fish largely as an article of diet in London, and they would buy more if they could get it. The supply is not generally sufficient for the demand. I could myself profitably dispose of a larger quantity of fish than I can get—three times the quantity, at least. There is a great desire on the part of the poorer classes to eat fish if they could get it. Sometimes they get a plaice for 4d. or 6d., enough for a family of five or six people, and generally such fish as the poorer classes get is of good quality, very good, indeed. It is only in very hot weather that there is any bad fish about. That, however, does not particularly affect the fish on the barrows, it is sold so quickly. A man generally sells his barrow-load out in about two hours in the morning, between ten and twelve o'clock. The flat fish do not generally keep good longer than the round ones. The haddocks and whitings have the insides removed before they are packed for the market, and then they keep good as long as plaice and other fish.

Have you any idea at about what price per lb. you sell fish to the poorer classes when there is a pretty good supply?—Last week I sold good plaice at the rate of a halfpenny per lb., and soles at 3d. per lb.

Is there a large trade in fish in country towns by barrows?—Yes; in all the large towns there is a great deal of fish sold from barrows. In all the towns I know they have barrows.

Is not a halfpenny per lb. for plaice and 3d. per lb. for soles an exceptionally low price?—No; at the best of times I do not get more than at the rate of 1½d., and 2d. per lb. for plaice would be considered an exorbitant price. I am obliged to have a large quantity two days in the week, to serve the Jews living in my neighbourhood, and they will buy only the best quality. I am obliged to have the best plaice and soles that I can get, and I never get more than at the rate of 2d. per lb. for plaice. It is eaten by the Jews on particular days as a relish, and not as ordinary food. At this time of the year there is a great demand for good plaice.

At what price have you sold salmon this year?—At 16d. per lb. I have not much demand for salmon, because of its high price. If I could get salmon which I could sell at 1s. or 14d. per lb., I should buy it. At a higher price than that I should not get customers for it. The soles which I mentioned as having been sold at 3d. per lb. were irrespective of size. The large ones were not charged at a higher rate than the small ones. I could sell a large quantity of salmon at 1s. or 1s. 2d. per lb., but it is not often I can buy it so as to be able to sell it at that price; the Jew shopkeepers would buy it. Fish on the barrows, as I have said before, is sold very quickly. I should say there would be none left over the night. At this time of year loads of mackerel are brought into the market late in the afternoon—sometimes about six o'clock in the evening. Loads come in from Penzance, and they are generally distributed over London and sold the same evening.

Is it your opinion that it would be beneficial to have a fish market at the West-end of London?—I do think it would be a great benefit.

The large fishmongers think it would be a great disadvantage, as it would divide the market, and involve their being buyers at each market?—That is very good on their side.

What do you consider would be the advantage to you personally?—There would not be so many people go to one market; and you would know better what you are buying.

Do you think a second market would tend to lower the price of fish generally to the public?—Yes.

Why so?—Because it would compel them to sell the fish, and not keep it hanging on hand all day, or storing it away till the next day.

It would relieve the trade of Billingsgate to some extent, would it not?—There would be only three buyers instead of six for every lot of fish offered.

The great dealers would be obliged to have representatives at each market, and the prices would be telegraphed between the two?—They would be obliged to go to both markets, and that would be a trouble to them.

How is the great bulk of the fish brought into Billingsgate?—By the vessels, and by train. The fish brought by the vessels is generally in the best condition at market, better than that brought by the railways. The fish, when caught, are laid on the cool gravel which the boat has for ballast, and they are not injured, as is the case—particularly with mackerel, which is a very tender fish—by being packed closely together in pads. A pad of mackerel is very soon injured to the extent of 5s. Sometimes out of a pad of 60 mackerel as many as 30 are broken. There are no steamers employed in this service, except those of Hewitt and Co., who have three, I believe; the others are sailing boats. The herrings are mostly brought by train on the Great Northern and Great Eastern Railways, from Yarmouth and Grimsby. They are not of a more perishable nature than mackerel. Very large quantities of fresh herrings are, in the season, brought from Norway. They are packed in boxes, with plenty of ice, and they generally arrive in good condition, and perfectly fresh.

Is there much loss from fish becoming bad in hot weather?—I do not lose much myself from that. At times there are losses of that kind, but I think not often, as the people will sell it cheap rather than have it spoilt. The dealers know what their ordinary consumption is, and they regulate their stock accordingly; but when fish is cheap they buy larger quantities. They sell cheaper, rather than let the fish spoil by keeping. The high-price fishmongers keep the fish in their ice-wells as long as they can. I have sometimes seen fish which has been in ice perhaps for a week, and I should think it would not be very good then.—In reply to further inquiries, the witness stated that a very large trade is done in London in fish for frying, and inferior quality was often bought for that purpose. Broken fish were had by all dealers alike, and they are not sorted out and reserved for the hawkers especially; the large dealers get them as well as the small ones. The market is open to all who choose to buy, and any member of the Committee could go to the market and buy, if he did not object to the pushing and hustling about. The small dealers have an equal chance of buying with the large fishmongers if they are willing to give the price. A large supply of fish daily by the railways would no doubt soon have the effect of cheapening the price of fish in London. He had no doubt treble the present supplies would readily find purchasers. The price of fish had of late years increased fully tenfold. The wholesale prices were very greatly increased for all descriptions of fish—certainly more than double within the last ten years, and the number of buyers seemed to increase in proportion as the supply of fish increased. No matter how much fish was brought into the market, it would all be sold if reasonable prices were taken. The larger quality of soles were packed in trunks, and the smaller in pads; the former fetched the highest prices. Those in the trunks would weigh from three-quarters to two lbs. each. Fish was sent every morning from the market into the country to towns all round London. It was bought and sent off by agents for the purpose, and the persons to whom it was conveyed met the train on its arrival, and took their baskets of fish. Very large quantities are disposed of every day in that way, which helped to reduce the supply for London itself. Large quantities are sent daily to Portsmouth and Brighton, as well as to other towns. All the fish caught at Brighton is bought wholesale on the beach, by the agents of London dealers, and paid for on the spot; and the fishermen prefer disposing of their fish in that way to sending it to London themselves and waiting for the return of the money. Fish was sent from London every morning as far as to Norwich, although Yarmouth is only eighteen miles distant. The fish owners of that place will not serve the Norwich dealers with one kind of fish without they take other kinds as well, and therefore they send the whole of their fish to London, and the fishmongers in the country have their supply from Billingsgate daily.

Proceedings of Institutions.

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Carlisle Mechanics' Institute.—In the report on the close of the forty-third year, the committee, while regretting that they have no great progress to relate, are glad to record that no serious retrogression has taken place. The library now contains between five and six thousand volumes, and during the past year 23 new volumes have been added. Respecting the issue, there is a decrease of 1,710 as compared with last year, when the number issued was 8,698, against 6,988 during this. During the year now closed, two classes were commenced, at the usual time, one for Latin and French, by Mr. Morrison, and the other for mathematics, book-keeping, and other English subjects, by Mr. Rotherham. By a melancholy accident the committee were deprived of the services of the former teacher at the beginning of 1867, and it was thought unadvisable to appoint a successor for the remainder of the session. Three lectures have been given during the year, two by the president, and one by Mr. M. D. Conway on America. The number of full members and annual subscribers is 304, and of reading members 123, making a total of 427. The financial statement shows that the receipts have been £174 5s. 11d., and that there is a balance in hand of £10 5s. 10d.

Chippenham Literary and Scientific Institution.—The report for last year congratulates the members on the continued success and usefulness of the Institution; the number of members at present is 63, viz., 21 at an annual subscription of £1, and 42 at 10s. The Institution has been favoured with lectures from R. N. Fowler, Esq., on "Mahomet and his Religion;" T. W. Saunders, Esq., Recorder of Bath, on "Criminal Jurisprudence in England;" and the Rev. Canon Jackson, on "Notices of Ancient Chippenham." The library, which has been increased during the past year by the addition of 40 volumes, includes many standard works, and now numbers nearly 800 volumes. The finance account shows that the receipts amounted to £59 12s. 4d., and that there is a balance in the hands of the treasurer of £7 6s. 2d.

EXAMINATION PAPERS, 1867.

The following are the Examination papers set in the various subjects at the Final Examination held in April last:—

ARITHMETIC.

THREE HOURS ALLOWED.

1. A man spends £42 every 28 days, and lays by £50 a year. What is his yearly income?

2. A bankrupt owes £5,920, and his effects realise £3,700; how much can he pay per pound; and how much does he owe to a creditor who receives £401 3s. 11½d.

3. If an engine of 12-horse power pump up 3,200 gallons of water in an hour and a-half from a pit 150 fathoms

deep, how long would the same engine take to raise 2,000 gallons from the mean depth of 100 fathoms?

4. Find by Practice the value of $573\frac{5}{8}$ ounces of gold at the rate of £3 17s. 9d. per oz.

5. Required the amount of 91 cwt. 3 qrs. 13 lbs. of hops at £9 13s. 7d. per cwt.

6. The knot, or nautical mile, is $\frac{1}{60}$ of a degree of latitude, which is equal to $69\frac{1}{2}$ statute miles. By what fraction of a statute mile does the knot exceed that mile?

7. Out of 11 guineas $\frac{2}{3}$ are paid to A and $\frac{1}{8}$ to B, after this $\frac{3}{5}$ of the remainder are paid to A and the rest to B. What sums did each receive?

8. A cistern can be filled by one pipe in 20 minutes, by another in 30 minutes; a third pipe can empty it in 12 minutes. Suppose the cistern to be half full, and the three pipes set open at once, in what time will it be full?

9. If $\frac{2}{3}$ of $\frac{3}{5}$ of a yard cost $\frac{3}{10}$ of a crown, how many francs ought I to pay for 3 yards, the franc being reckoned at 10d.?

10. A ship, with a crew of 48 men, and provisions for 40 days, is becalmed; the captain reduces the daily allowance from 2 lbs. to $1\frac{1}{2}$ lb., and sends away, by a passing steamer, a portion of his men, by which he was enabled to hold out for 45 days. How many men were sent away?

11. How many men will be required to dig a trench $64\frac{4}{5}$ yards long, $10\frac{2}{5}$ feet wide, and $2\frac{1}{2}$ feet deep, in $2\frac{3}{5}$ days of $9\frac{1}{2}$ hours each, when it took 9 men $2\frac{3}{8}$ days of 10 hours each to dig a trench 81 yards long, $12\frac{1}{2}$ feet wide, and $1\frac{1}{5}$ feet deep?

12. What number of works, each consisting of 2 vols., and each volume 2·47 inches thick, would fill 4 shelves, when 19 works, each 3 vols., and each volume 1·3 inch thick, fill 10 such shelves?

13. What is the difference, in the present currency, between £2 7s. $9\frac{3}{4}$d. and £2 7 florins, 9 cents., 3 mils?

14. At what rate per cent. per annum, simple interest, will £350 amount to £399 in 4 years?

15. In what time will £2,750 gain £412 10s. at 5 per cent. per annum?

16. What is the difference between the banker's discount and the true discount of £517 10s. for 7 months at 6 per cent. per annum?

17. If the 3 per cent. Consols be at 90, what should be the price of a £50 railway share paying 4 per cent., that the two investments may be equally advantageous?

18. Bought cinnamon at 7s. per pound, and sold half of it at 6d. an ounce. At what price per ounce may I sell the other half, that the gain on the whole may be 10 per cent.?

19. I have paid to day £2,180, being repayment, with interest, of two loans, both contracted at the same time, viz., £1,163, borrowed at 4 per cent. per annum, and £994 at $4\frac{1}{2}$ per cent. per annum. How long is it since the sums were borrowed?

20. I bought a horse for 25 guineas cash, and sold him the same day for 30 guineas, with such allowance of credit as made my immediate gain $17\frac{3}{41}$ per cent. What term of credit did I allow?

BOOK-KEEPING BY DOUBLE ENTRY.

THREE HOURS ALLOWED.

1. Journalize and post, in proper technical form and language, the following imaginary transactions, and make out from the ledger a trial balance, a profit and loss account, and a balance-sheet.

On 1st January, 1867, John Ward and W. Campbell have assets and liabilities as follows, viz.:—

Assets.	£	s.	d.
Business premises and plant, valued at	1,500	0	0
Sherry	3,525	0	0
Brandy	500	0	0
Due by J. Smith	100	0	0
Bills receivable	200	0	0
Cash	1,115	0	0
Liabilities.			
Bills payable	750	0	0
Due to P. Robb	208	0	0
John Ward's capital is	3,908	0	0
W. Campbell's ,,	2,074	0	0

They take J. Smart into partnership on the 1st January, 1867. J. Smart's capital amounts to £2,500 in cash.

N.B.—The capital and drawings of the partners are subject to interest at 5 per cent. per annum, and the net balance of profit and loss is divisible thus—to John Ward, one-half; to W. Campbell and J. Smart one-quarter each.

1867.		£	s.	d.
Jan. 1.	Advanced for petty cash	20	0	0
	Sold J. Smith, brandy	15	0	0
,, 2.	Paid cash for our acceptance of J. Duncan's draft, due this day	200	0	0
Jan. 5.	Discounted J. Green's acceptance for £200, and received £198 in cash and allowed for discount £2	200	0	0
	Bought of J. Smith, sherry	715	0	0
	Accepted J. Smith's draft, at two months' date	600	0	0
,, 8.	Invoice of brandy bought of S. Nokes	1,035	0	0
,, 9.	Received consignment of claret from T. Sandford, to be sold by us on his account, at 2 per cent. commission on proceeds, invoiced at	300	0	0
	Paid cash for carriage of above consignment	2	0	0
,, 10.	Advanced cash to T. Sandford	100	0	0
	Paid cash for additional business premises	500	0	0
,, 12.	Cash paid S. Nokes for brandy	1,015	0	0
	Discount allowed by S. Nokes	20	0	0
	Sold W. Brown, brandy	50	0	0
	Sold W. Brown, sherry	500	0	0
	Received W. Brown's acceptance, at 21 days	550	0	0
,, 15.	Cash drawn out by W. Campbell	100	0	0
,, 20.	Consigned to R. Green, to be sold by him on our account and risk, sherry, invoiced at	200	0	0
,, 27.	Lent cash to J. Smith	100	0	0
,, 29.	Bought sherry of P. Robb	632	10	0
	Paid P. Robb on account, by handing to him W. Brown's acceptance for £550	550	0	0
,, 30.	Sold brandy for cash	500	0	0
	Sold sherry for cash	850	0	0
,, 31.	Sold for cash part of consignment of claret from T. Sandford	150	0	0
	Paid salaries of clerks	45	0	0
	Trade charges, paid out of petty cash	19	4	0
	Interest on amount drawn out by W. Campbell	0	4	2
	Interest on J. Ward's capital	16	5	8
	,, W. Campbell's capital	8	12	10
	,, J. Smart's capital	10	8	4
	Estimated wear and tear of business premises and plant	10	0	0
	Commission earned on consignment of claret	3	0	0
	Stock of sherry on hand	3,473	0	0
	,, brandy ,,	960	0	0

2. What is book-keeping by double entry as distinguished from single entry?

3. Describe what is the import respectively of the terms *personal*, *real*, and *nominal*, as applied to accounts.

4. How is the account of profit and loss affected if, on

closing the books, (*a*) the value of the stock of goods on hand is over-estimated; (*b*) if a known bad debt is reckoned as a good one?

5. If, on examining the books, it be found that the following entry, viz., "Accepted John Smith's draft, at two months, £100," has been journalized and posted as if it had been "Received John Smith's acceptance, at two months, £100," what journal entry or entries would be necessary to correct the error?

ALGEBRA.

THREE HOURS ALLOWED.

1. Reduce to their simplest forms—

$$\frac{\dfrac{x}{x-y}+\dfrac{y}{x+y}}{\dfrac{x}{x-y}-\dfrac{y}{y+y}}$$

$$\frac{\sqrt{a+b}+\sqrt{a-b}}{\sqrt{a+b}-\sqrt{a-b}}-\frac{\sqrt{a+b}-\sqrt{a-b}}{\sqrt{a+b}+\sqrt{a-b}}$$

2. Solve the equations $x^3 + x^2 - x - 1 = 0$.

$$\left.\begin{array}{l} x^2 - xy = 70 \\ xy - y^2 = 21 \end{array}\right\}$$

3. Extract the square roots of the binomial surds.

$$43 - 30\sqrt{2}; \quad \sqrt{20}-\sqrt{15}$$

4. There are 10 flags; 1 white, 2 red, 3 blue, 4 yellow; and signals are made by employing them all at the same time one over the other. How many signals can be thus formed.

5. The first and seventh term of a geometrical series being 30 and 1,920, find the sum of 13 terms of the same.

6. A requisition for 87,500lbs. of bread was levied upon a certain number of villages in equal portions; subsequently two of them fell into the power of the enemy, and the whole amount had to be contributed by the remaining ones, who, in consequence, each contributed 5,000lbs. more than under the original terms of the levy. How many villages were there?

7. The interest on a certain sum of money is £225, and the discount on the same for the same time £187 10s. What is the sum?

8. Find the value of $(x - c)^2(x + 2c)$; and hence determine the relation that must subsist between q and r, in order that the equation $x^3 + qx + r = 0$, may have two equal roots.

9. Prove that the sum of the series,

$$1 + n^2 + \left(n\frac{n-1}{2}\right)^2 + \left(n\frac{n-1}{2}\,\frac{n-2}{3}\right)^2 + \text{etc.,}$$

is equal to the coefficient of x^n in the expansion of $(1+x)^{2n}$ and show that this latter is $\dfrac{1\,.\,2\,.\,3\,\ldots\ldots\,2n}{(1\,.\,2\,.\,3\,..n)^2}$

10. A race is to come off between two boats, in each of which three rowers are to be placed, chosen by lot out of six men, whose relative powers of propulsion are represented by the numbers 7, 8, 9, 10, 11, 12. Find the chance that one at least of the two middle men will be among the winners in the race.

11. If $x^3 + y^3 + z^3 = m\,xyz$, and $x^6 + y^6 + z^6 - x^3y^3 - y^3z^3 - z^3x^3 = 0$, show that there are eighteen systems of ratios, $x : y : z$, which satisfy the above equations and obtain their values.

(To be continued.)

FINAL EXAMINATIONS, 1867.

The following additional certificates have been awarded:—

119—Houston, Alexander, aged 18, Belfast Academy, teacher—Arith. (1st); Alg. (1st); Geom. (2d).

121—McNeill, Henry, aged 17, Belfast Academy, teacher—Arith. (1st); Alg. (1st); Geom. (2d).

PARIS EXHIBITION.—AWARD OF PRIZES.

The list of prizes which appeared in the *Journal* last week was translated from the proof-sheet of the list compiled by the Imperial Commission, who have now issued a revised list, which has many important variations. Even this is not to be wholly relied upon, and it is undergoing revision. As soon as possible a complete list will be printed. The following corrections, especially referring to the list of the grand prizes, may, however, be made. The number of grand prizes awarded to the United Kingdom is nine, namely:—

Group 1.—Class 4 (Architectural Designs)—Mr. Waterhouse, of Manchester.

Group 5.—Class 43—British India (cotton).

Class 40—Bessemer (production of steel).

Group 6.—Class 51—Mr. C. W. Siemens, London (regenerative gas furnace).

Class 54—Whitworth Company, Manchester (machine tools).

Class 64—Atlantic Telegraph Company.

Class 66—The Life-boat Society (for organization and material for saving life).

Messrs. Napier, Glasgow; and Messrs. Penn, Greenwich.

Messrs. Siemens Brothers were classed by the jury for a grand prize in Class 64, Telegraph Apparatus, and the Lords of the Admiralty for a series of models of the internal arrangements of ships of war, but the former were *hors concours* on account of one of the members of the firm being a juror, and the Admiralty declined to compete for rewards.

Parties of working men continue to arrive from all parts of Europe to visit and study the Exhibition; 250 Danes reached Paris at the end of last week, under the guidance of M. Walfhagen, vice-president of the Danish Commission. A special vessel was chartered to convey the party to France, and the visitors are lodged in the Pavillion de Sully, at the cost of a Commission specially formed to assist workmen visitors; they are to stay in Paris nearly a fortnight. The next party expected is from Turin, and will consist of workmen and manufacturers, sent at the cost of the province of Turin. Before leaving home, they were received by the Prefect of Turin, who wished them a pleasant journey, and gave them some counsel as to studying the Exhibition in such a manner as to make their visit profitable to the town and province of Turin. A considerable number of Belgian workmen are expected in Paris in the month of August; this visit is the result of the efforts of M. Dupré, the Belgian Commissioner, acting in concert with the Commission above referred to. In this case, and probably, also, in those already cited, the workmen will be brought over without cost to themselves.

The aquatic competitions commenced on the 7th, and were to be continued until the 12th instant. Five cutters have arrived from England, including that of Oxford University, and one from Canada.

WORKS IN BRONZED CAST-IRON.

The American Department of the Paris Exposition contains a numerous collection of lamps of various kinds, clock-cases, and other works, all of them executed in bronzed iron, which have attracted the attention of all visitors. They are the productions of Tucker's Manufacturing Company, established in the City of Boston, and they are the results of experiments that have been carried on by Mr. Tucker during the last seventeen years.

The material employed is American iron of several varieties compounded together, with a comparatively small admixture of the Scottish Coultness iron. A combination of several important qualities is thus obtained, and a material is produced possessing smoothness in working, softness, and also a sufficient degree of strength. The castings, having been executed in green sand, undergo the customary process of pickling in dilute sulphuric acid, after which they are finished on their salient points either with the lathe or the emery-wheel, as may appear to be most expedient for the polishing; the beautiful granulated velvet-like surface of the mat or field, however, upon which the polished portions of every design appear to rest, is produced by the action of the acid only, and without the application of any kind of tool. The bronzing—the final stage of the manufacture —is accomplished by the means about to be described, imparting to the metal a colour that becomes part of itself.

The iron, covered with a film of vegetable oil, is exposed to heat of a high temperature (the degree of the temperature and the duration of the exposure having been determined by experiment), and thus the desired colour is obtained, through the union of the carbonised oil with the oxydised metal. This, accordingly, is a *permanent* bronzing, since it is actually incorporated with the substance of the metal; and, consequently, the works thus produced are not liable to injury from the action of the atmosphere, from the touch of the hand, from changes of temperature, from excessive damp, or from various other casualties to which they may be exposed. In some degree the bronze surface produced on the cast-iron by this process appears to resemble that of certain steel pens, which have a bronze-like aspect; but there exists no real resemblance between these two classes of productions, since, in the case of the steel pens, a superficial varnish (which may be removed by the application of alcohol) is added to the oxydised metal, and deposited upon it, but not incorporated with it.

The designs for the lamps, clock-cases, and other works exhibited by Mr. Tucker at Paris have been furnished in every instance by Mr. Francis Fracker.

This Tucker bronzing process, which is patented in England and France as well as America, may be applied to the decoration of stoves, iron bedsteads, and many other works in iron, which at present are usually coated with lacquer or varnish.

Specimens of the Tucker collection exhibited at Paris have been secured for the South Kensington Museum.

PRODUCTION AND CONSUMPTION OF EGGS.

A writer in the *Grocer* says:—

We know of no article of consumption in the import accounts of the Board of Trade, upon which we can place our finger, that will show a greater or more continuous increase than the simple unit of the egg. Unimportant as it might have appeared some years ago, it has gone on from thousands to hundreds of thousands, and then to millions, until the quantity seems incredible, and could only be realised in extent by the measurement of tons weight. All this represents so much food required by the necessities of one portion of the population, or the luxuries of another; for the frugal and solitary breakfast of the man of letters, or to mix on the table with the more numerous viands of the social family party; or to be called into sudden requisition in aid of the housewife when the casual visitor steps in. These are the ostensible signs of consumption, but the egg appears everywhere, and yields to every turn of the culinary art—in pastry of all kinds, in confectionery, in the making of ices, sometimes in medicine; and when in a state unfit for the table it refines our sugar, or softens the leather that preserves whiteness to the delicate hands of the fair sex. All descriptions are eatable and nourishing, but it is only the egg of the domestic fowl that enters into general use. In some of the villages along the rocky portion of our coast, the season when the sea-gulls hover in swarms about the ledges of the rocks, is for them a time of plenty; and there is a danger and romance about the mode of their collection quite unknown to, or ever dreamed of, by the farmyard peasant or the servant of the commercial incubating establishments. Our home producers, as a class, are probably not much given to the study of figures, or they might be struck with the vastness of the importations, of a demand that never relaxes, and a supply from abroad that continually increases—so much, indeed, that our egg merchants look upon the home source as a mere trifle in the scale in satisfying the wants of their customers. We have no accounts of the numbers brought to the markets of Leadenhall and Newgate, and only the rough estimate of a French authority, who gives the value of the poultry of the United Kingdom at less than one year's supply of eggs from abroad. Thus the annual import of eggs from the Continent averaged 73,000,000 from 1843 to 1847; it averaged 103,000,000 during the next five years, 147,000,000 for the next five years, and 163,000,000 for the next five years. In 1861 we received from abroad 203,313,360; in 1864, 335,298,240; and, in 1866, 438,878,880, being in excess of one million a day, and valued at £1,097,197 sterling. These are facts that might well astonish the agricultural mind. The Royal Agricultural Society is evidently alive to their importance, for at the meeting for the Eastern Counties, to be held at Bury St. Edmunds in the present month, the farmyard poultry was to form a prominent department. Prizes are offered for the best description of fowls, varying from £5 downwards. No similar inducements have been given by the Society since their show at Chester in the year 1858.

At the present time, although there is much attention devoted to the subject, it is principally confined to the fanciers, and upon the best description of birds, so that poultry, and their product, the egg, have not gained any general popularity amongst persons engaged in agriculture. Whether this arises from a disbelief in the profitableness of the occupation, or the difference between the tenure of the soil in England and that of France, from whence we derive our great supply, is a matter beyond our purpose to attempt any elucidation. We merely wish to place the facts before our readers, who are necessarily more interested in the sale than the production of articles. That much may be learned, both from the study of these facts and the mode in which the eggs are produced in France, we readily admit; and if the ventilation of this topic will aid in the increased supplies from at home, we shall have effected some good beyond the general readers of this journal. It is evident that more than one million sterling in value of eggs were landed on our shores that could have been raised with the greatest ease at home; and the question naturally arises, "How do foreigners thus take possession of our own markets, with all the disadvantage of having to convey a perishable cargo through the hands of shippers and commission agents, with all the risks and attendant expenses?" There has been no want of inducement in the matter of prices, as in the year 1854 the Custom-house computed the real value of eggs as low as 4s. 6d. per ten dozen; but during the last six years 6s. per 120 has been reckoned, which is also the wholesale price in France. Amongst the arrangements under the French treaty was the abolition of the duty charged on eggs. On August 8, 1854, there was a reduction to 4d. per 120, and from that time to March 6, 1860, they were entered by the cubic foot at the rate of 8d. This mode was found less convenient, and the previous system was adopted—that of number, called great hundreds, or 120, as a unit; and eggs were placed amongst free articles.

The countries from which we derive our principal supplies will be seen by the following table, with the exception of the year 1866, where the total alone has yet been ascertained:—

From	1862.	1863.	1864.	1865.	1866.
	gt. hunds.	gt. hunds.	gt. hunds.	gt. hunds.	gt. hunds.
Hamburg	6,864	3,066	3,813	5,670	...
Bremen	15,433	10,250	3,413	1,881	...
Holland	3,801	1,363	1,206	1,772	...
Belgium	169,462	158,526	217,067	171,855	...
France..............	1,501,402	1,872,753	2,393,521	2,795,899	...
Portugal	13,813	4,251	6,232	1,712	...
Spain	139,628	78,828	54,465	31,328	...
Channel Islands...	85,226	94,487	113,294	21,617	...
Other countries...	381	900	1,141	1,710	...
Total	1,936,010	2,224,414	2,794,152	3,033,444	3,657,324
Value......	£593,813	£673,638	£835,028	£928,247	£1097,197

In the volume of trade and navigation published by the Board of Trade, the average prices given for the computed value in the year 1865 were—Belgian 6s. 2d., French 5s. 11d., the Channel Islands (their own produce) 5s. 10d., and Spanish 6s. 3d. per great hundred. It would, however, be an erroneous impression to suppose that Belgian eggs were therefore worth more than French, the mode adopted by the authorities at the Custom-house being this: to take the average prices published in the *Economist* for that year as follows, per 120:—

	s.	d.		s.	d.
January	7	6	July	5	9
February	7	4½	August	5	7
March...	5	9	September...	5	6¾
April	5	7½	October	6	9⅜
May	5	4⅛	November...	7	8½
June	5	3	December	8	7

and apply the same price to the imports of each month from all parts. The average price so applied varies from month to month, as will appear from the above quotations. Since the value attached to the importations for the entire year is the sum of the values of each month, it follows that the average value of the importations for the year varies for the several countries according to the month or months in which the bulk of those importations took place. The cargoes are shipped chiefly in steam vessels, and arrive at the ports of Southampton, London, Folkestone, Arundel, Newhaven, and Shoreham. Of the supplies from Ireland, in the absence of any positive data, it is generally supposed that they have diminished from that quarter.

The time for laying eggs takes place according to the temperature and the climate. They begin in France, and in most parts of Europe, from January to March, the forward hens laying in the earlier months, and the sluggish not until the latter. For purposes of preservation the late eggs are considered the best. April, May, and June are the months when the production is most abundant; but in July the laying slackens, to resume a certain degree of fresh activity in August and September. In October and November, which is the season of the moult, it ceases almost wholly, and is null in the month of December. To obtain eggs in this season artificial means are employed by raising the temperature of the houses, and some poulterers assert that a supply can be had in the winter by feeding the birds on buckwheat, which is then given whole, and upon meat. In parts of France where breeding is carried on as a trade, there is a separate class of persons called *coupeurs*, or hatchers. The hen is seldom allowed to lead the chickens after being hatched; the *coupeurs* entrust this office either to capons or turkeys, the hen being more valuable for laying eggs than rearing the brood. If a similar attention to the details were giving in this country, the stock of fowls which roam about the farmyard, and gather corn from the threshing, instead of being a mere adjunct and perquisite of the servants, would return sufficient to discharge the rental of many a small occupation. Such, we have understood, has been the case where the experiment has been fairly tried, and once this becomes an established notion our home supplies will increase in a greater ratio than they do at present. According to a competent authority, at this time, what with improved native and imported varieties, we possess the best stock of egg-layers, hatchers, and table fowls in the world. In no country is the management of our best poultry-yards excelled. These should serve as a model for the rest; and, to bring up the wholesale results to their true national importance, all we require is an extension of the taste for bird-farming amongst those who earn their living on the land.

To show the seasons in which the laying is most active, and the variations that take place, we give the following figures from our import tables:—

	1867.	1865.	1866.
	Number.	Number.	Number.
January	6,999,000	13,301,000	16,386,000
February	17,851,000	22,323,000	25,794,000
March...	31,849,000	32,231,000	46,537,000
April	42,650,000	39,966,000	51,471,000
May	39,930,000	49,507,000	56,767,000
June	33,177,000	37,890,000	52,334,000
July	35,332,000	38,488,000	36,476,000
August	34,549,000	34,279,000	40.566,000
September...	29,711,000	28,444,000	33,916,000
October	19,547,000	24,056,000	26,917,000
November...	15,864,000	20,424,000	20,696,000
December	27,836,000	23,103,000	31,018,000

In connexion with this subject, we paid a visit to the National Poultry Company's establishment, which is within a short walk of the Bickley Station, on the South-Eastern Railway. This experiment in the production of poultry is the most important that has been made, and another is projected at Kattern Bourn, Shenley, Herts, about fourteen miles from London. The plans for the houses at Bromley were made by Mr. Geyelin, but were not carried out to their original extent. The home, now under the management of Mr. Massey, consists of a principal building, sheds, houses, yards, &c., and market gardens occupying six acres of dry, gravelly soil. The main building is a greenhouse-looking erection, of wood and glass, 340 feet long, 20 feet broad, and 12 feet high to the central ridge. The pens are arranged along each side of the long central passage, which has a floor of red tiling, with shafts admitting cold air in summer and warm air in chill weather, ventilation being provided from above. The pens are in two tiers—that is, a ground-floor and a story, each occupying twelve feet of frontage, with a breadth of three feet from the wired front to a wall of boards, and outside the boards is a similar range of pens of the same size, having for their outside wall a framework of wood and wire. Thus, a cock and six hens have the range of an inner pen of 12 feet by 3 feet, completely shut in from the weather, and also of an outer pen of equal size, roofed, but exposed to the open air through wire of about two-inch mesh. This was thought to be rather close confinement for all but the most inactive breed of fowls, and therefore there have been lately added to the building open runs, each of about 30 feet square, in which the different pens of birds are permitted to exercise and scratch in turn. When a hen wants to lay she creeps into a box placed outside her pen in the central passage, and her nest consists of a circular earthenware pan, 12 inches in diameter and 5 inches deep, containing some dry sandy earth. Scrupulous attention, of course, is paid to lime-whiting and to every detail of cleanliness in the pens and the vessels.

At one end of this building, which accommodates the brood stock, are the departments for fattening and hatching, and the apparatus for artificial incubation; the department for rabbits, the duck-houses and tanks, the boiling-houses, pigstyes, &c., occupy other portions of the premises. There were about a thousand head of poultry on the premises; all looked healthy, and, being the season for laying, the attendants were collecting the eggs into baskets. These, we believe, are sold to some of the hotels in town, but a great many are disposed of for the purpose of hatching, and are marked in pencil according to the different breeds. At present the Bromley Home is chiefly devoted to the breeding of what may be called "fancy" birds, and since the stocks are excellent, the diffusion of the best class of birds throughout the country will produce national benefits superior to the sale of mere quantities of eggs. The French varieties of Houdan, La Flèche, and Crevecœur, are said to bear confinement, are hardy, good layers, and non-sitters, and they vary in prices from 15s. to 60s. each bird, and for eggs, per sitting of 13, from 15s. to 18s. If we might venture to offer a word of friendly advice to this and similar establishments, in which we take the liveliest interest, it would be to reduce the price of eggs. Those disposed of for domestic use are, we believe, rendered unfit for the purpose of sitting, and high prices act as a prohibition upon all such experiments. Although opinions amongst poulterers differ respecting the use of natural means for hatching, yet for the bad sitters the invention of the incubator may prove useful. Mr. Crook, who is a fancier, has by his firm in Carnaby-street, Regent-street, patented a very successful invention, to which we shall hereafter allude. In such undertakings as the Bromley Home we possess the source of supply. The arrangements for feeding, hatching, and fattening are open to visitors, and are interesting even to casual observers; for farmers, and others commercially affected, they should furnish examples for the proper and successful management of their own poultry-yards.

The increasing demand for eggs, although it has failed to elicit any corresponding or commensurate efforts in our own country, has not been lost upon our quick-witted and versatile neighbours across the Channel. The metropolis is almost wholly supplied from foreign sources, and new-laid eggs, as they are called, demand exorbitant prices, and only reach the tables of the well-to-do classes. Those who have the good fortune to accept the hospitalities of the farmhouse, in addition to the never-failing appetite on such occasions, will discover the superiority in this portion of the fare, and will gladly return with a contribution from the henhouse. The provincial towns, with trifling exceptions, monopolise the eggs from the surrounding neighbourhoods; the small farmers who do not sit the market sell their supply to the country shop-keepers, or give them in exchange for other articles. Many cottagers contrive to keep a few fowls, and where there is no pig these act as scavengers, consuming the scraps of the family, the outside cabbage-leaves, peelings off boiled potatoes, &c., and if supplied with a little corn, lay a great many eggs. There are no regular agents or dealers engaged in the trade, but the grocer or the butcher of the village takes the surplus at the usual market price, deducting his commission. The consumption of an ordinary household in the country is as much as 2,000 eggs per annum, so that the residue has no great effect upon the metropolis, or the large manufacturing towns. Indeed, it is but too probable that the care of poultry has retrograded; for, as the small holdings have been absorbed by large farms, many an active, frugal housewife has been withdrawn from rural life who had the will and the means of supplying the market. Neither the cottager with his allotment (instead of his share in the village green or common) nor the artizan has range enough for producing eggs to advantage; therefore, in catering for the public, the wholesale merchant must occasionally pay a personal visit to the markets in France, and rely upon the foresight and activity of agents to meet the wants of his trade.

Many have entertained a belief in the existence of gigantic establishments, which, from assertions made in the public papers, and the largeness of the imports, found ready credence; but we believe that throughout France there are none more extensive than our own at Bromley. The egg business is almost exclusively confined to small farmers, by whom it is carried on in a vigorous and commercial manner, more especially in the provinces of Burgundy, Normandy, and Picardy. According to the latest agricultural returns furnished by the French Government, for 43 departments, the value of eggs and feathers produced each year was taken at 32,500,000 francs. This was considered to be much under the mark, as the consumption of Paris alone is equivalent to 12,000,000 francs; and although, per head, it would be less in the provinces than at Paris, it may be fairly set at rather more than half as great. The eggs, which at Paris are worth 60 francs per 1,000, average 40 francs per 1,000 in the country. We thus obtain a total of 100,000,000 francs, or, with the export, 142,000,000 francs (£5,680,000), as the annual value of French eggs. At this rate the consumption amounts to 2s. per head of the whole population. One of the French writers on this subject gives 7,000,000 eggs as the annual produce; and if we average 60 eggs as the number that each hen would lay, there would be at least 117,000,000 fowls, and these, at 3 francs apiece, would give £14,625,000 sterling as the value of the poultry stock of France. For the past year, on the same ratio of 60 per head, the eggs imported into this country represent the laying of no less than 7,300,000 eggs.

From a pamphlet published by M. de la Fosse at Goussainville, near Houdan, we select a few statistics of the trade in that immediate neighbourhood, which will give a correct idea of its importance. At the markets of Houdan, Dreux, and Nogent le Roi, there are sold annually upwards of 6,000,000 head of fat poultry, viz.:—

	Per Week.	Per Month.	Per Year.
Houdan	40,000	160,000	1,920,000
Dreux	50,000	200,000	2,400,000
Nogent le Roi	35,000	140,000	1,680,000
Total	...	...	6,000,000

This does not include the sale of chickens, poultry, and eggs, which forms a separate trade. Every village, says an eye-witness, has its weekly markets, where farmers and their wives bring their produce for sale, in preference to selling at the farmyard. The police regulations in the markets are strictly enforced. The various products are classified before the market begins. Each person is bound to keep his assigned place, and not allowed even to uncover his goods, much less to sell, before the bell rings, under the fine of 5 francs. At the ringing of the bell, the bustle to uncover, the rush of buyers, and the chattering, are worth while to witness. The dealers and merchants take up their stand outside the market, where they send all the products they purchase. The seller has a ticket given him, with the purchase price on it, and is paid on delivery of the goods at the dealer's stand. It seems almost incredible that even in some village markets, within two hours, such a vast amount of business can be transacted, with the greatest order and decorum. Some merchants will purchase from 2,000 to 3,000 pounds of butter; others 20,000 to 30,000 eggs, or 1,000 heads of poultry, &c., all which are taken to their warehouse to be sorted, packed, and perhaps forwarded the same day to London or Paris. The current price for every commodity is fixed and known immediately after the market opens, and depends entirely on the demand and supply. At the wholesale poultry market, La Vallée, in Paris, where the poultry, dead or alive, is forwarded from all parts of France, there are a number of licensed agents, who sell by auction to the highest bidder; this market is a curious scene from four till nine in the morning, when thousands of crates of all descriptions of poultry are cleared out and disposed of.

The eggs are sold in the markets of Paris in baskets, which ought to contain 1,040 good valuable eggs. These are counted, at the wish of the buyer, by the official agent, who verifies the *déchet*, or loss; also the size, by passing them through a ring. For such there are charges from

25 cents per *mil* for counting, 60 cents per *mil* for examination, and 15 cents for passing the ring; besides these charges there are the duties collected by the Municipality of Paris. The production of eggs in France is, to a certain point, unlimited; and the attention of breeders has been drawn to the improvement of the breed by foreign additions, and modes of preservation also for long voyages. In consequence of the success which had attended the exhibition of the poultry of La Bresse (in Burgundy), a stir was created, and on the representations made to him, the Minister of Agriculture instituted a special show for fat poultry at Paris. The fowls were distributed into five classes—La Bresse, Houdan, La Flêche, Normandy, and all other breeds. La Bresse kept the lead, gaining, after a struggle with La Flêche, the gold medal for the best fowls of any class. Much of this success was due to the strenuous exertions of Count Le Hon, as no region had greater difficulties to surmount than La Bresse, which constitutes the arrondissement of Bourg, in the department of Ain, and extends from the banks of the Saône eastward to the spurs of the Jura. The fowls have certain features to distinguish them, and the hen begins to lay in February, and for a month or six weeks lays daily, then three or four times a week, till she has laid about 160 eggs, besides rearing two or three broods. On every farm poultry is fatted to a certain extent, and until lately was little known or appreciated at Paris, though for 40 years it has been exported to St. Petersburg.

The prices of eggs per 1,000 have been at different periods as follows in the Paris market:—

	fr.		fr.
1804	48	1850	43·79
1826	64·50	1852	45·32
1845	48·74	1853	50·19
1846	50·27	2866	60

And the consumption had risen from 74,000,000 in 1807, to 174,000,000 in 1853. These are collected from ten or twelve departments which encircle the city, but more than half is furnished by Le Calvados, L'Orne, and the Somme. From the latter and the Pas de Calais are derived the English supplies. Around Houdan are the villages of Goussainville, de St. Lubin, and La Haye. Near La Flêche au Mans are Villaine and Boce; also some hamlets near St. Pierre Dive, Lisieux, Calvados, and Beauvais in the Somme—all localities abounding in poultry. The ports at which the greatest amount of activity takes place are Calais, Cherbourg, and Honfleur; at Calais the eggs are packed in cases with straw, 1,100 to the case; and at Cherbourg and Honfleur in cases of 600 and 1,200.

The total value of exported eggs, of which England received the lion's share, has been as follows :—

	fr.
1815 to 1835, an average of ..	2,786,000
For 1850 „ ..	7,512,000
„ 1858 „ ..	10,418,000
„ 1859 „ ..	11,340,000
„ 1861 „ ..	17,845,000
„ 1864 „ ..	27,974,000
„ 1865 „ ..	37,650,000
„ 1866 „ ..	42,334,000

How these exports have been distributed will appear by this table :—

	1864.	1865.	1866.
	kilog.	kilog.	kilog.
Belgium..............................	46,364	84,107	130,627
United Kingdom..................	22,095,262	29,765,361	33,458,539
Germany	15,767	35,713	278,659
Spain	34,789	52,632	
Italy	14,799	16,117	
Switzerland	143,200	133,753	
United States	2,156	3,370	
Other countries	27,120	29,719	
Total...............	22,379,457	30,120,772	33,867,825

As a general definition, the districts that grow buckwheat produce the greatest abundance of eggs; and if we would prosecute this matter successfully at home, it would be well to ascertain whether buckwheat cannot be imported to any considerable extent at a cheap rate. Upon the quality and description of food egg-laying much depends.

From a review of these facts, it will be apparent how much our neighbours, the French, have accomplished; an export of one million sterling per annum in eggs is no insignificant item even in the balance-sheet of a nation. We have entered upon this subject of foreign supply as fully as the public returns and the sources of information, private and otherwise, would enable us, since we have felt its importance to our readers, especially as retailers, and also its indirect bearing upon producers. Many of the former must visit the capital city of France during the unusual attractions of this year, and they may be induced to diverge from the ordinary route. By a personal knowledge of the egg districts named, they will learn, better than by any descriptions we can give, how our admirable and talented rivals in commerce have acquired superiority in this department of business, and exemplified the saying of the great artist, and whilst imparting which maxim he probably gave to his pupils the secret to his own fame, "that by attention to trifles it is possible to arrive at perfection."

Fine Arts.

◆

Rembrandt Etchings and Drawings.—A large and choice collection of these works is now on view at the Burlington Fine Arts Club, Piccadilly. Among other valuable etchings may be seen that of "Christ Healing the Sick," commonly known as "The Hundred Guilder." Of the five copies exhibited of this masterpiece by Rembrandt, displaying different stages in the plate, the greatest interest naturally attaches to that which in the recent sale of Sir Charles Price's collection fetched the unprecedented sum of £1,150. This work, which can be traced in an unbroken pedigree from Rembrandt himself, is lent by its present possessor, Mr. C. J. Palmer. The student of the great master of the art of etching will find examples of each distinctive class, such as landscape, portrait, sacred history, &c. The collection also contains some rare Rembrandt drawings. Among the well-known collectors represented may be mentioned Holford, Felix Slade, Seymour Haden, Fisher, Morrison, Palmer, Baron Marochetti, the Duc d'Aumale, &c.

National Portrait Exhibition.—Photographs have been taken of these portraits, in illustration of the official catalogue. The catalogue contains biographical and historical notices, together with an introduction by Mr. Samuel Redgrave to the exhibition and the art of portrait painting generally. About eight hundred photographs have been taken, with the consent of the owners, out of a collection numbering 866 works. The entire series has been distributed in eight volumes, and the cost of the whole, bound in half morocco, is £50. Any person, however, may select for himself a volume of 100 portraits for six guineas, or a packet of sixteen for one guinea. A single photograph can be purchased for 1s. 6d. Specimens may be seen in the exhibition, or at the office of the Arundel Society, Old Bond-street.

Manufactures.

◆

Alkali Works.—The Government Inspector, appointed under the provisions of the Alkali Act, has just presented his report for 1866, from which it appears that a further advance has been made in the manner of preventing the escape of muriatic acid during the processes of manufacture of various salts, the amount of escape last year being 0·78, against 0·88 of the preceding year. This improvement, small though it be in apparent amount, is a real benefit to the residents in the neighbourhood of chemical manufactures, as the difference of 0·15 represents more than 15 cwt. of muriatic acid per diem, or 4½ tons per week. The condensation of the dangerous acid is thus shown to be generally satisfactory, although some allowance must be still made for leakage, which it is difficult to estimate, and which it requires increased vigilance, and possibly an amendment of the Act, to prevent. The manufacture of chemical salts appears to be still increasing, the amount of salt decomposed during the first year of inspection having been 288,000 tons, in the second 310,000 tons, and during the third (1866) 371,950 tons. The report adds :—"It is possible to do a little more by careful management of the powers granted by the Act, chiefly by giving permanence to the habits begun, and giving stability to work which had been hastily done to meet the exigencies of the occasion, although impossible to use the Act so as to satisfy all the demands of the public when the works are in a very crowded district. The inspector can duly see that the proper arrangements are made, and that they are in order when he makes his visits. At all other periods he must leave the public to watch." Only one case (at St. Helen's) was heard during the year as legally an infringement of the Alkali Act. Several cases of escape of more than 5 per cent. have resulted in immediate alteration on representation. The following is the report on the alkali trade of the Tyne, signed by Mr. Richard Cail, hon. secretary Tyne branch, and embodied in the inspector's report:—

February, 1867.

Statistical report of the alkali trade of the Tyne branch, comprising all the manufacturers on the Tyne, and one firm having part of their works at Glasgow, which is included in the following figures, to the extent of 93 per cent. from actual returns, leaving only 7 per cent. to be computed where no return has been made, the salt decomposed being 151,700 tons.

QUANTITIES OF THE PRINCIPAL ARTICLES MANUFACTURED BY THE TYNE BRANCH IN ONE YEAR.

	Tons.		£	s.		£
Soda crystals	86,000	at	5	10	..	473,000
Soda ash and alkali	74,000	at	11	0	..	814,000
Bi-carbonate of soda	11,000	at	18	0	..	198,000
Sulphate of soda	2,400	at	4	5	..	10,200
Bleaching powder	27,000	at	14	0	..	278,000
Epsom salts	590	at	8	0	..	4,720
Caustic soda 70 per cent.	3,720	at	26	0	..	96,720
Glauber salts	20	at	6	15	..	135
Oil of vitriol for sale	9,000	at	4	0	..	36,000
Sulphate of copper	200	at	26	0	..	5,200
Muriatic acid	700	at	3	0	..	2,100
Hypo-sulphite of soda ..	400	at	18	0	..	7,200
Chloride of manganese ..	1,300	at	3	10	..	4,550
Total tons ..	216,330				Value	£1,929,825

Computation of the principal materials used in the manufacture of the above articles by the Tyne branch for one year, in order to show the employment given to shipping, &c., as follows:—Salt, pyrites, chalk, cliff, manganese, nitrate of soda, timber (for packages), giving employment to shipping, as follows:—

Inwards, to the extent of	466,000 tons.
Outwards (manufactured goods)	264,000 „
Together......	730,000 tons.
Coals (a small quantity of which are carried by shipping)	340,000 „
Total materials carried by sea and rail	1,070,000

The above amount of 1,070,000 tons of raw material is of the value of £830,925, and exclusive of all materials used for buildings, plant, and repairs; which latter, from the nature of the acids and gases employed, cause rapid destruction, and occasion constant rebuilding and renewal.

Summary.—Tyne Branch.

Value of raw material................	£730,925
Tons weight of manufactured goods....	215,930
Computed value	£1,929,825
Tons weight per carriage by sea and rail	1,070,000

The inspector observes hereon, that if the same proportion is carried out elsewhere as on the Tyne, the total annual value of the alkali manufactures will be £4,750,000.

Commerce.

Commerce in New Caledonia.—A paragraph in a recent number of the *New Zealand Herald* calls attention to the progress that is being made in New Caledonia, between which and Auckland a regular trade seems likely to spring into activity. It will be remembered that New Caledonia, first discovered by Captain Cook in the year 1772, and more fully explored subsequently by the French traveller d'Entrecasteaux, is one of the most considerable islands in the South Pacific, and repeated attempts have of late years been made by the French Government to render it a permanent settlement. Great difficulties, however, would seem to be in the way of its advance, as it is upwards of eight hundred miles distance by sea from the nearest point of the Australian mainland, and nine hundred from New Zealand. It is about two hundred miles long by twenty-five broad, and is situated between the parallels of 20° and 23°, crossed by the meridian of 165° east of Greenwich. Any commercial importance that it might have with regard to England, would arise chiefly from its connection with the line of communication between India and the Australian colonies by way of Torres Straits, which separate New Guinea from the Australian mainland. "A fair sample of unthreshed rice," says the *New Zealand Herald*, "has recently arrived in Auckland from New Caledonia, which produces also coffee, sugar, cotton, and tropical fruits. We are informed that the winter is somewhat like our summer, only with more frequent rains, while the summer weather, though much hotter, is not, as might be supposed, oppressively so. The island being a long and narrow one, there is constantly a sea breeze passing over it. Extreme drought is unknown. As many as three crops of rice are taken from the same ground in the same year, the first crop only being sown, the second and third springing from the stems of the preceding one. Of maize, too, we are informed, the cultivator may take two crops in the year off the same field, or five crops in two years, though for this crop of course the land must be cultivated and planted each time. The land, we are told, is very rich, and is easily procurable from the Government. The price is 8s. per acre, but the Governor will allow emigrants to take up land on five years' credit, paying meanwhile a rent at the rate of 6 per cent. per annum on the cost. As the land produces at once, and the cultivation of it is easy, men used to labour, and with only a small capital sufficient to furnish provisions for the first eight or ten months, cannot, says our informant, fail of success. Much of the land, which is for the most part open or untimbered, is covered with rich grass, and ready at once for pasturage. The coffee plant not long since was in full berry, and so heavy, we are told, was the crop that the shrubs were literally bowed down to the ground, unable to sustain the fruit. The natives, if at times troublesome, are dealt with as natives and in French fashion. There is no interference of a Parisian Aborigines' Protection Society. Englishmen, and all foreigners indeed, are placed on the same footing as French residents—with this exception, that they are ineligible to hold Government appointments."

Colonies.

Australian Mineral Statistics.—The mineral statistics of the colony of Victoria for 1866, as compiled by the officers of the Mining Department, comprise a great mass of information, especially regarding the condition of the gold-fields. The first subject touched upon is that of mining for gold. A large decrease in the number of miners is noticed. In 1865 the mean number of miners employed throughout the year was 83,214, and last year it was 73,577, showing a decrease of 9,637. There is a decrease in the mean number of alluvial miners of 7,592, and of quartz miners of 2,045. On the 31st December, 1866, the numbers were—alluvial miners, 55,916; quartz miners, 14,878. As regards the separate divisions the numbers stand thus: Of alluvial miners there is an increase of 217 at Ballarat division, a decrease of 268 at Beechworth, an increase of 56 at Sandhurst, a decrease of 2,260 at Maryborough, a decrease of 4,095 at Castlemaine, and an increase of 135 at Ararat. Of quartz miners there is a decrease of 1,196 at Ballarat, a decrease of 1,676 at Beechworth, an increase of 242 at Sandhurst, a decrease of 165 at Maryborough, an increase of 283 at Castlemaine, and an increase of 64 at Ararat. The total number of Chinese miners in the colony on the 31st December, 1866, was 20,134, of whom all but 34 were engaged in alluvial mining. It is not easy to enumerate these people, and it is not believed that any large decrease has taken place in their numbers as compared with 1865. The average earnings per man per annum, without distinction of classes, has been £80 8s. 3d. This amount, as compared with previous years, is large, and may be accounted for partly by the aid which the miner derives from machinery and partly from the facilities afforded him of operating on new and rich quartz-reefs, which day after day are discovered by the prospector. A table of the average earnings per man since 1860 shows that at that period they amounted to £79 9s. 3d., that they declined in 1862 to £67 17s. 10d., and that since then they have progressively increased to their present figure. The average earnings in 1866 of alluvial and quartz miners respectively are given—for the former £66 4s. 1d., for the latter £132 17s. 4¾d. These figures must not be regarded as absolutely correct, minute accuracy being impossible. The increase in the number of steam engines employed is not large; the number engaged in alluvial mining being 480, with an aggregate horse-power of 9,981, as compared with 473, of 8,208 aggregate horse-power, in 1865. Those employed in quartz-mining number 510, of 9,231 horse-power, and working 5,437 stamp-heads. The total value of the machinery is £2,068,527, being nearly double of that in use in 1859. The largest value is in the district of Ballarat, which is set down at £743,683. The number of distinct quartz reefs is 2,282, and there are 869 square miles of auriferous grounds, which have been worked more or less since the first discovery of the gold-fields. A great extent of known auriferous country still remains worked only here and there by small parties of miners. At the end of the year 76,546 acres of land were held as claims under the bye-laws, but the whole of this area was not being worked, 20,778 acres being protected by registration or exemption certificates. Comparing the number of men employed on some of the lands held under lease, they amount to 3,796, as against 5,487, which should be employed by the covenant of the leases. The value of all the "claims" throughout the country, as arrived at by a careful estimate, is £8,987,067, as against £8,498,924, the estimate for 1865. The returns of quartz crushed show an average of 10dwt. 16·2gr. per ton. In 1865 the average was 11dwt. 17·4gr. per ton. The returns from 1859 to 1866 give an average of 11dwt. 22·80gr. per ton. The average yield of gold per ton in the Beechworth district is very high, 18dwt. 3·7gr.; in the Ballarat district very low, 4dwt. 21gr. The average per ton from 145,088 tons of quartz-tailings, cement, mullock, &c., has been 4dwt. 6·43gr. The prices for crushing quartz, &c., ranged from 4s. to £1 10s. per ton. There has been a considerable increase in the number of races constructed. There are at the present time 2,249 miles of races in the colony made exclusively for mining purposes, and they have cost £319,934, or £141 6s. 3d. per mile. There were 94 water-right licenses for gold-mining purposes in force, for 264 miles of races and 298 acres of reservoirs. The quantity of water to be diverted per diem was 123,562,800 gallons, and the reservoirs were estimated to contain 227,515,552 gallons. The number of miners' rights for one year issued in 1866 was 45,637; only 19 were issued for a term of two years, 2 for three years, 23 for four years, and 1 for 15 years. Of consolidated rights, 283, representing 7,825 single rights, were issued. A summary of the mining companies registered to the end of 1866 shows the number to be 1,982, the number of shares 5,702,243, nominal capital £19,477,911. Ballarat stands at the head of the list, for £7,904,986, and Beechworth next for £5,239,925. Passing to other metals and minerals, the quantities raised during the year are said not to be large. Of silver ores 2,139 tons were raised, and 2,348 oz. of silver smelted; of black sand (mostly oxide of tin), 92 tons, of copper ores, 350 tons, of flagging, 10,400 square yards and 60 tons, of slate, 82 tons, and of magnesite, 6¼ tons. One diamond was found at Eldorado, near Beechworth. A summary of the value of metals and minerals raised in the colony from the first discovery of the gold-fields to the end of 1866 gives the value of gold obtained at £129,909,063, silver, £3,441, tin, £185,537, copper, £3,494, antimony, £27,978, coal, £2,899, kaolin, £7,028, flagging, £13,938, besides minor items; the total of mineral produce for that period being £130,154,332.

Notes.

International Literary Congress, Paris.—It has already been mentioned that the Société des Gens de Lettres, of Paris, intended to take advantage of the presence of the large number of visitors attracted by the Exhibition this year, to hold an international congress, with the view of discussing those subjects which interest men of letters in all parts of the world. The proposition has been well received, and the Minister of the Interior has, it is said, granted the society a subsidy of 10,000 francs towards the expenses.

Scientific Association of France.—This association, established by the Imperial astronomer, M. de Verrier, and the meetings of which are held at the Observatory of Paris, has grown rapidly into importance. It appears, by a report just issued, that it has already applied the sum of 78,000 francs in aid of important scientific experiments, and has, moreover, made a reserve of 17,000 francs for the general purposes of the association. The association now announces its intention of publishing its *Bulletin* weekly instead of monthly, as at present, and including in it notices of all scientific discoveries, accounts of new inventions, criticisms on scientific and other works, &c., and has issued the first number of the new series.

Correspondence.

Paris Exhibition.—Sir,—We shall feel obliged by your early correction of an error in your published list of the recipients of the Silver Medal in Class 44 of the Paris Exhibition. The medal was awarded to Morson and Son, and not "Mawson," as printed in your *Journal* of the 5th inst. This is of some importance to us, as there is a chemical manufacturer of the latter name.—Yours, &c., T. Morson and Sons.

31, 33, and 124, Southampton-row, Russell-square, W.C.,
8th July, 1867.

Messrs. Schooling and Co., of North-side, Bethnal-green, also write to say that they obtained a Bronze Medal in Class 72.

MEETINGS FOR THE ENSUING WEEK.

Tues ...R. Horticultural, 3. General Meeting.
Thur ...Zoological, 4.
Sat ......R. Botanic, 3¾.

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

Par. Numb.

Delivered on 26th June, 1867.

197. Sierra Leone, &c.—Return.
198. King Aggery—Correspondence.
301. Metropolitan Local Government, &c.—3rd Report, Evidence, &c.
373. Excise and Customs (Ireland)—Return.
Martial Law—Circular Despatch to Colonial Governors.
Public Petitions—Thirtieth Report.

Delivered on 27th June, 1867.

201. Bill—Life Policies Nomination.
206. ,, Local Government Supplemental (No. 5).
208. ,, Libel (amended).
387. Chancery and Common Law Officers (Ireland)—Returns.

Delivered on 28th June, 1867.

355. Shipping—Return.
375. Court of Admiralty—Statement.
380. Brewers, &c.—Accounts.
The *Tornado*—Correspondence, Part IX.

Delivered on 29th June, 1867.

207. Bill—Tancred's Charity (amended).
46. (v.) Trade and Navigation Accounts (31st May, 1867).
366. Lunacy—Twenty-first Report of the Commissioners.
356. Army (Whitworth Guns)—Correspondence.
388. Storm Warnings—Letter.
Public General Acts—Caps. 27 to 35.
Public Petitions—Thirty-first Report.

Delivered on 1st July, 1867.

212. Bill—County Courts Amendment.
211. ,, Chatham and Sheerness Stipendary Magistrate.
213. ,, Increase of the Episcopate.
214. ,, Naval Stores.
216. ,, Policies of Insurance (Lords' Amendments).
363. Queen Anne's Bounty—Return.
398. Education (Ireland)—Annual Report.
406. Proposed New Boroughs (Population, &c.)—Return.

Delivered on 2nd July, 1867.

215. Bill—Libel (amended).
389. The *North*—Report of Mr. Montague Bere.
392. Police (Metropolis)—Returns.
395. Postal Services (India and China)—Correspondence.
399. East London Water Bills, &c.—Report.
400. Isle of Man Lunatic Asylum—Correspondence.
401. Voters (Staffordshire)—Return.

Delivered on 3rd July, 1867.

210. Bill—Canongate Annuity Tax (Edinburgh).
379. Paris Exhibition—Correspondence.
411. Population, &c. (West Riding of Yorkshire)—Return.
Jews (Moldavia)—Correspondence.

Delivered on 4th July, 1867.

204. Bill—Master and Servant (amended).
217. ,, Sir J. Port's Charity (amended).
218. ,, Local Government Supplemental (No. 2) (Lords' Amendments.
219. ,, Lunacy (Scotland).
220. ,, Recovery of certain Debts (Scotland).
224. ,, Promissory Notes and Bills of Exchange.
390. Private Bills—Return.
415. Division of Counties, Population, &c.—Return.
Industrial Questions and Trades Unions—Correspondence.

Delivered on 5th July, 1867.

209. Bill—Admiralty Court (Ireland).
226. ,, Game Laws Amendment (Ireland).
227. ,, Trades Union Commission Act (1867) Extension.
384. House Duty—Return.
385. Licences (Wine and Beer, &c.)—Return.
396. Tancred's Charities Bill—Minutes of Proceedings.
414. Burton-on-Trent—Returns.
418. Coal Mines—Return.
Woodhouse Collection—Correspondence.
Woodhouse Collection—Appendix.

Patents.

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From Commissioners of Patents' Journal, July 5th.

Grants of Provisional Protection.

Animal charcoal, &c., revivifying and cooling—1707—W. Orr.
Animal charcoal, retorts for manufacturing—1718—J. Fletcher.
Beehives—1775—T. Tancred.
Beverages, cooling—1751—A. M. Clark.
Brushes, manufacture of—1730—E. T. Hughes.
Clocks, transmitting the hour and synchronism of the hours between public and private—1275—H. A. Bonneville.
Cotton, &c., preparation of—1734—R. H. Barton.
Drain bottoms, bricks, &c., combination of materials for making—1732—J. Holmes.
Electric telegraphs—1755—C. and S. A. Varley.
Electric telegraphic communicators, examining coating of—1771—M. Gray.
Fabrics, finishing after cleaning or dyeing—1743—G. Ker.
Fibrous materials, drawing and spinning—1726—F. D. Frost.
Fire-arms, breech-loading—1785—J. Lang.
Fishing tackle, swivels for—1765—J. Welch.
Furnaces, adapting to burn creosote, &c.—1742—S. E. Crow.
Furnaces, smoke-consuming—1749—C. Sadler.
Galvanic batteries, flexible medico-electric—1750—R. Beard.
Gas manufacture—1748—G. McKenzie.
Gold bullion, toughening—1767—F. B. Miller.
Guns, projectiles, and cartridges—1757—G. Clark.
Heavy bodies, machinery for lifting, lowering, &c.—1760—J. Meiklejon.
Horse-shoes, substitute for roughing—1724—C. D. Abel.
Iron and steel manufacture—1747—J. Onions.
Leather tanning—1754—C. Erba.
Malt liquors, &c., revivifying—1698—J. Crompton.
Metals, rolling and shaping—1714—J. H. Johnson.
Minerals, apparatus for getting—1783—J. G. Jones.
Mines, lifts, &c., for raising minerals from—1781—J. Edwards.
Mine-shafts, preventing over-winding in—1777—W. Fairley.
Oils and fatty matters, expressing—1716—J. Thom.
Omnibuses, &c., registering number of passengers—1773—W. Cooke.
Paper manufacture—1752—W. E. Newton.
Pens and pen-holders—1759—R. W. Barnes.
Rail rods for balconies, &c.—1739—S. Tuddenham.
Railway trains, communication between passengers, guard, and driver—1737—W. King.
Railway trains, signals for—1736—S. Hancock.
Refrigerators—1738—C. Askew.
Saddles—1740—D. E. McMahon.
Saws and saw teeth—1756—W. R. Lake.
Sewing machines—1761—J. Fletcher and W. Carr.
Steam-boilers—1706—T. Holt.
Sugar, treating, &c.—1605—W. Orr.
Telegraphic insulators—1720—J. C. Fuller.
Time-keepers—1769—G. T. Bousfield.
Umbrellas and parasols—1766—J. E. Boyce and R. Harrington.
Vegetable fibres, bleaching—1712—J. Graham.
Vehicles, &c., utilising power spent in retarding the motion of—1762—C. D. Abel.
Washing powder—1412—H. A. Bonneville.
Watches, clocks, &c., repeating striking movement for—1779—C. D. Abel.
White lead, manufacture of—1728—A. M. Clark.
Windows, doors, shutters, &c.—1703—R. Logan.
Wood screws—1763—J. H. Johnson.
Wool, &c., oiling preparatory to carding—1758—L. J. Crossley and J. Sunderland.
Yarns, sizing—1744—J. Fletcher and W. Carr.

Inventions with Complete Specifications Filed.

Churns—1863—W. R. Lake.
Cotton gins—1864—W. R. Lake.
Cotton, &c., metal bands for securing bales of—1880—W. R. Lake.

Patents Sealed.

39. B. Biggs.
43. F. B. Dœring.
48. C. F. Claus.
58. W. T. Sugg.
60. H. Doulton.
61. J. Petrie.
62. J. M. Hetherington.
72. S. P. Widnall.
80. J. Tomlinson.
90. F. Brampton.
98. S. de Wilde.
145. A. Upward.
156. W., J., and H. Harrison, and B. Croasdale.
202. W. E. Newton.
250. E. L. Ebersburg.
292. A. V. Newton.
336. W. E. Newton.
342. J. Ramsbottom.
352. W. Clark.
386. J. Ramsbottom.
699. M. J. E. Julienne.
967. J. Harker.
1297. J. Holmes.
1340. A. H. Gilman.

From Commissioners of Patents' Journal, July 9th.

Patents Sealed.

69. E. T. Hughes.
70. E. M. Chaffee.
71. A. G. Morvan.
75. I. Kendrick.
77. M. Henry.
83. C. de Bergue.
85. H. D. P. Cunningham.
87. W. G. Blagden.
97. G. Haseltine.
122. R. Newhall.
133. W. Weldon.
134. W. Weldon.
429. A. V. Newton.
789. C. Allhusen.
998. J. A. Bouck.
1241. J. Combe.

Patents on which the Stamp Duty of £50 has been Paid.

1653. N. Jarvie and W. Miller.
1660. A. S. Tomkins.
1698. G. Russell.
1763. W. K. Westly.
1691. J. Wilson.
1756. R. Smith and J. Booth.
1786. J. Clayton.

Patents on which the Stamp Duty of £100 has been Paid.

1633. B. Lambert.
1644. R. Pollit.